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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|-------------------------------|------------------|
| 10/076,915 | 02/14/2002 | Anna Lee Tonkovich | 13007B | 1868 |
| 34833 | 7590 | 05/14/2010 | | |
| FRANK ROSENBERG P.O. BOX 29230 SAN FRANCISCO, CA 94129-0230 | | | EXAMINER LEUNG, JENNIFER A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1797 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 05/14/2010 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/076,915 | Applicant(s) TONKOVICH ET AL. | |
| | Examiner JENNIFER A. LEUNG | Art Unit 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5, 13, 16-23, 80-86 and 98-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 18-20, 22, 23, 80-84, 86, 98 and 99 is/are allowed.
- 6) ☒ Claim(s) 13, 16, 17, 85 and 100 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed February 25, 2010 has been considered. Claims 1-4, 6-12, 14, 15, 24-79, 87-97 and 101 are cancelled. Claims 5, 13, 16-23, 80-86 and 98-100 are pending.

Claim Rejections - 35 USC § 102 and § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirsch (US 3,712,595).

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Hirsch discloses a process comprising: stacking a plurality of shims (i.e., plates **4, 5, 6, 7**) such that a continuous flow path is formed through the shims (i.e., through a first series of aligned openings **8**; see FIG. 2); said flow path being substantially parallel to the shim thickness (see FIG. 2); wherein the plurality of shims comprises at least three shims **4, 5, 6, 7** through which the flow path is formed and a straight, unobstructed line is present through the flow path in said at least three shims (i.e., an unobstructed line is present in at least one of the series of aligned openings **8**; see FIG. 2); bonding the shims (i.e., by conventional means, such as welding at spots **11**) to form a device capable of performing a unit operation on a fluid (i.e., a vapor); passing the fluid into the device such that the fluid passes through the flow path in said shims; and performing the unit operation on the fluid as it passes through the flow path in which the straight, unobstructed line is present in said at least three shims; wherein the unit operation comprises distillation (see abstract; column 1, lines 10-32). The process further comprises the step of passing a second fluid (i.e., a liquid; a portion of liquid will be inherently entrained with the vapor during the distillation process) through a second flow path in said at least three shims (i.e., via the second series of aligned opening **8**), said second flow path being substantially parallel to the shim thickness (see FIG. 2); and wherein the fluid which passes through the first flow path and the second fluid which passes through the second flow path do not mix within the stack of shims.

3. Claims 85 and 100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirsch (US 3,712,595).

Hirsh discloses that the device comprises at least three shims (i.e., four plates **4, 5, 6, 7**; FIG. 2). Hirsch, however, does not specifically disclose at least five shims. In any event, it

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would have been obvious for one of ordinary skill in the art at the time the invention was made to select an appropriate number of shims, such as at least five shims, for constructing the device in the process of Hirsch, because the duplication of parts for a multiplied effect was held to be obvious. See MPEP 2144.04. As noted in Hirsch (see, e.g., column 3, lines 43-60), the shims are stacked to provide resistance to the flow of vapors through the center of the column, wherein the resistance is influenced by the length of the flow path through the shims. It would have been obvious for one of ordinary skill in the art to provide additional shims in order to provide additional resistance to the flow of vapors, as appropriate for establishing a uniform flow.

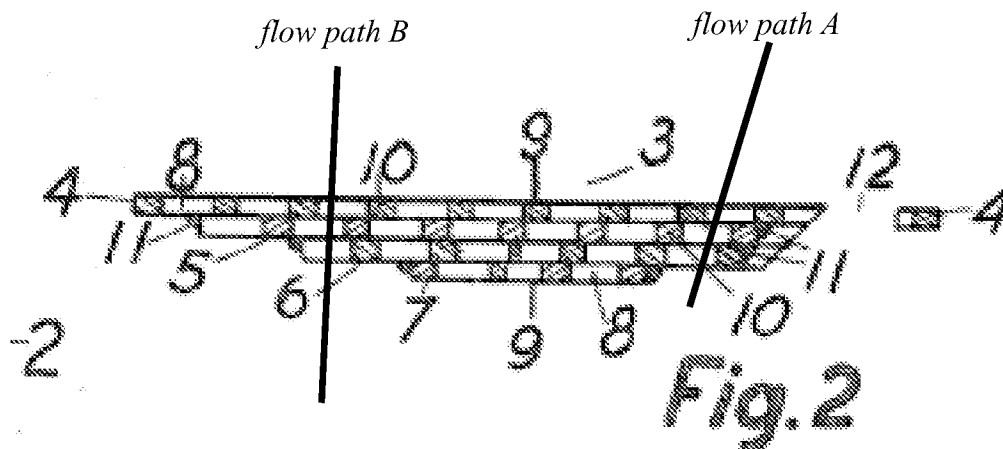
Response to Arguments

4. Applicant's arguments filed February 25, 2010 with respect to the rejection of claims 13, 16 and 17 under 35 U.S.C. 102(b) as being anticipated by Hirsch (US 3,712,595) and the rejection of claims 85 and 100 under 35 U.S.C. 103(a) as being unpatentable over Hirsch have been fully considered but they are not persuasive.

On page 14, in the last paragraph, Applicant argues that Hirsch fails to anticipate or render the claims obvious, because "Unlike the invention of claim 13, as amended, Hirsch does not teach or suggest the claimed feature "wherein the flow path is said at least three shims does not connect with any other flow paths."".

It is noted, however, that the argued feature has not been recited in claim 13. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In addition, the Examiner asserts that the process of Hirsch meets the language of the claims. See FIG. 2, which has been annotated as follows:



As seen from the figure, for example, the fluid in the flow path A and the fluid in the second flow path B do not mix with one another within the stack of shims (with respect to claim 17).

5. The previous rejection of claim 82 under 35 U.S.C. 102(b) as being anticipated by Burdon et al. (WO 00/21659) has been withdrawn in view of Applicant's amendment calling for a microchannel flow path comprising a metal film "on the edge of the flow path that is substantially parallel to shim thickness." In contrast, Burdon et al. (see FIG. 14) discloses that the metal film **452** is deposited the surface of layer **444**, which is not an edge of the flow path that is substantially parallel to the shim thickness.

6. The previous rejection of claims 13, 15-17, 21, 85 and 100 under 35 U.S.C. 103(a) as being unpatentable over Bottcher et al. (US 5,657,818) in view of the definition of "Partial Condenser" has been withdrawn in view of Applicant's amendment calling for the unit operation of "distillation" to be performed on the fluid passing through the flow path in said at least three shims. Bottcher et al. fails to disclose or suggest a method of using the device to perform the specific unit operation of distillation on the fluid passing through the flow path.

Allowable Subject Matter

7. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art fails to disclose or adequately suggest the claimed process comprising the steps of performing the unit operation of distillation on the fluid flowing through the flow path and flowing a heat exchange fluid as the second fluid through the second flow path, wherein the flow paths are substantially parallel to the shim thickness, and wherein the fluid in the flow path and the second fluid in the second flow path do not mix.

8. Claim 82 is allowable. The prior art does not disclose or adequately suggest the claimed process wherein, in particular, the microchannel flow path through the stack of at least three shims comprises a metal film on the edge of the flow path that is substantially parallel to the shim thickness.

9. Claims 5, 80, 81, 83, 84, 86 and 98 are allowable for the same reasons set forth in the Office Action mailed on January 21, 2009.

10. Claims 18-20, 22 and 23 are allowable for the same reasons set forth in the Office Action mailed on November 24, 2009. In addition, claim 99 is allowable because it has been amended to depend from an allowable base claim.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797